

CHAPTER 3

GRADUATE ENROLLMENT

Overview

Total graduate enrollment in degree-granting institutions in all disciplines increased 3.9 percent from 1992 to 1996 (NCES 1999). In contrast, graduate enrollment in science and engineering fell 2 percent from 1996 to 1997—the fourth consecutive drop since 1993. This drop in graduate enrollment is attributable to the decline in the number of white graduate students (both men and women). Although the numbers of black, Hispanic, and American Indian graduate students (both men and women) are on the rise, their increase does not counter the decline caused by dwindling numbers of white graduate students.

Transition to graduate school

Women

As of the mid-1990s, women and men pursued graduate study after the science and engineering bachelor's degree in roughly equal proportions. Among science and engineering bachelor's degree recipients in academic year 1995, 22 percent of women and 20 percent of men were enrolled full time in 1997. (See text table 3-1.)

Minorities¹

Asian science and engineering bachelor's degree recipients are more likely to continue on to graduate school than their counterparts from all other racial/ethnic groups, including whites. Other racial/ethnic groups have comparable levels of participation in graduate study following the bachelor's degree. Among science and engineering bachelor's degree recipients in academic year 1995, 29 percent of Asians were enrolled full time in graduate school by April 1997, compared to between 20 and 21 percent of whites, blacks, Hispanics and American Indians. (See text table 3-1.)

Persons with disabilities

Persons with disabilities, who constituted 2.6 percent of the academic year 1995 bachelor's science and engineering graduates, were more likely than those without disabilities to enroll part time in graduate school. Among 1995 science and engineering bachelor's degree recipients, 16 percent of those with disabilities were part-time students in 1997 compared with 8 percent of those without disabilities. (See text table 3-1.) 1995 science and engineering bachelor's degree recipients with disabilities were also less likely to be employed—22 percent were not employed in 1997 compared to 14 percent of those without disabilities.

Enrollment trends

Women

In 1997, 55 percent of the graduate students in all fields were women (Syverson and Bagley 1999) as were 40 percent of the graduate students in science and engineering fields. The number of women enrolled in science and engineering graduate programs increased from 94,396 in 1980 to 162,029 in 1997. (See figure 3-1.) Gains were largest in the 1980s and have been more modest in recent years. From 1980 to 1997, the number of women graduate students increased in all science and engineering fields. The number of men enrolled in graduate science and engineering programs peaked in 1992 and has declined each year since.

Over the past two decades, the percentage of graduate students who are women has increased both in science and engineering as a whole and in each major science and engineering field. (See figure 3-2.) In 1980, 29 percent of science and engineering graduate students were female; this proportion had risen to 40 percent in 1997.

In some fields—engineering, computer science, and agricultural sciences—the number of female graduate students generally continues to increase. Within the last few years, however, enrollment of both women and men has

¹ Data refer to U.S. citizens and permanent residents only.

Text table 3-1.

Enrollment, degree attainment, and employment status for the academic year 1995 science and engineering bachelor's degree recipients: April 1997

Sex, race/ethnicity, and disability status	Total Number	Enrollment status, April 1997			Degree attainment, April 1997		Employment status, April 1997		
		Full-time student	Part-time student	Not student	Attained an MA or higher by April 30, 1997	Not attained an MA or higher by April 30, 1997	Employed full-time	Employed part-time	Not employed
		Percent			Percent		Percent		
Total.....	353,000	21.2	8.7	70.1	2.2	97.8	73.8	11.7	14.5
Sex									
Women.....	172,500	22.3	9.3	68.4	1.5	98.5	69.3	13.6	17.1
Men.....	180,500	20.2	8.2	71.7	2.9	97.1	78.1	9.8	12.1
Race/ethnicity									
White, non-Hispanic.....	269,300	20.3	8.1	71.7	2.1	97.9	74.9	11.9	13.2
Asian/Pacific Islander.....	33,500	29.3	9.1	61.7	4.8	95.2	64.7	7.3	27.9
Black, non-Hispanic.....	23,200	20.9	11.1	68.1	1.2	98.8	73.3	12.4	14.3
Hispanic.....	24,200	20.7	12.4	66.9	1.3	98.7	73.9	14.1	12.0
American Indian/ Alaskan Native.....	2,900	21.5	14.6	63.9	2.6	97.4	77.6	13.5	8.9
Disability status									
Persons without disabilities.....	343,700	21.3	8.5	70.2	2.2	97.8	74.0	11.6	14.3
Persons with disabilities.....	9,300	16.9	16.0	67.1	3.6	96.4	64.9	13.5	21.5

NOTES: Because of rounding, details may not add to totals. Percents calculated on unrounded data.

SOURCE: National Science Foundation/Division of Science Resources Studies 1997 SESTAT Integrated Data Files.

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dropped in several fields. In the physical sciences, for example, enrollment of both sexes has been declining since the early 1990s. Because the rate of decline has been larger for men, the percentage of physical science graduate students who are women has increased. (See appendix tables 3-1 to 3-3.) For example, in 1993, 9,202 women were enrolled in graduate physical sciences programs representing 26 percent of total graduate physical sciences enrollment. In 1997, 8,851 women were enrolled in graduate physical sciences programs, but they were 28 percent of all graduate physical sciences enrollment. Similar declines in numbers, but increases in percentages, occurred in mathematics and—more recently—in the biological sciences.

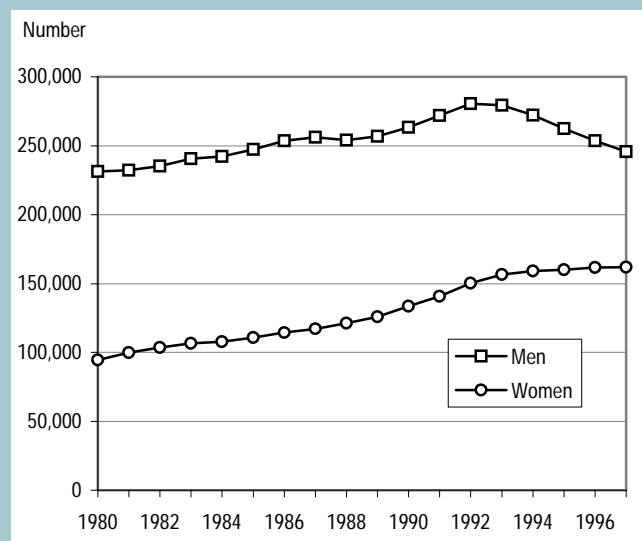
The percentage of first-year science and engineering graduate students who are women is on the rise. In 1980, 30 percent of full-time first-year science and engineering graduate students were female, compared to 41 percent

in 1997. (See appendix table 3-4.) Again, most of this increase can be attributed to a decline in the number of men among first-year students since 1992. Male full-time first-year science and engineering graduate student enrollment dropped 17 percent between 1992 and 1997 (from 52,696 to 43,550), while the number of women declined only 2 percent—from 30,438 to 29,963—over the same period.

Minorities (U.S. citizens and permanent residents)

Across all disciplines, the numbers of Asian, black, and Hispanic graduate students increased between 1996 and 1997, rising by 1 percent, 4 percent, and 3 percent, respectively. The number of American Indian graduate students held steady from 1996 to 1997 (Syverson and Bagley 1999).

Figure 3-1.

Science and engineering graduate students, by sex: 1980–97

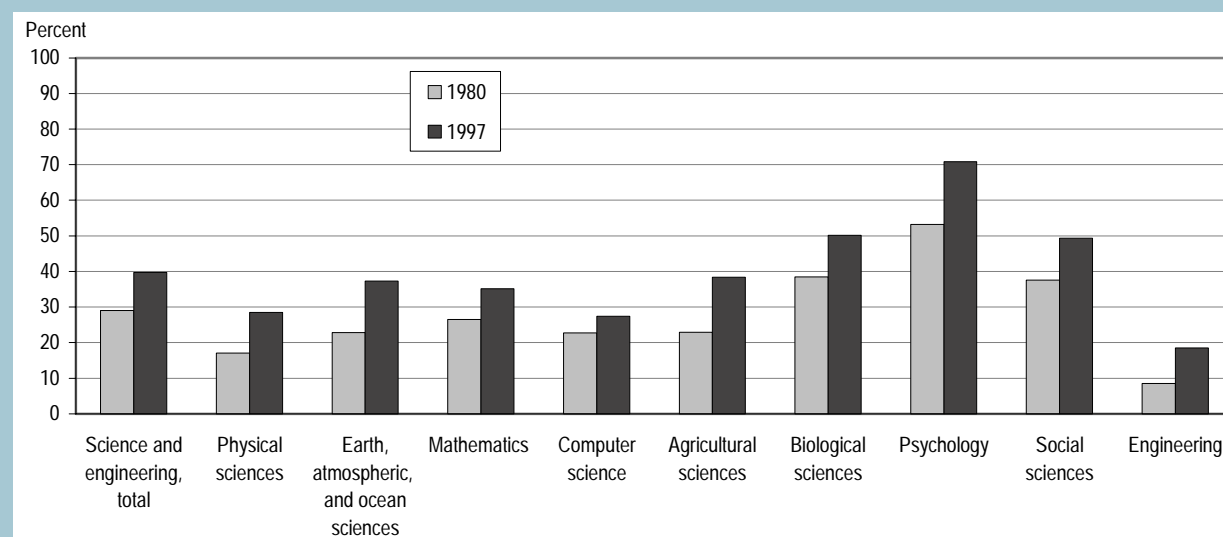
SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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In science and engineering, the numbers of black, Hispanic, American Indian, and Asian graduate students have increased since 1982 (the first year for which data by race/ethnicity are available). (See figure 3-3.) Black science and engineering graduate students rose in number from 10,388 in 1982 to 19,363 in 1997, Hispanics from 7,724 in 1982 to 14,988 in 1997, American Indians increased from 909 in 1982 to 1,599 in 1997, and Asians from 8,170 in 1982 to 26,078 in 1997. (See appendix table 3-5.) The number of white science and engineering graduate students also increased over that time period—from 215,264 in 1982 to 227,936 in 1997. Although white graduate enrollment in science and engineering increased in absolute terms between 1982 and 1997, it dropped 11 percent over the last 4 years from a peak of 256,859 in 1993.

From 1982 to 1997, the percentage of graduate students who are black, Hispanic, American Indian, or Asian increased in science and engineering as a whole as well as in each major science and engineering field. The proportion of black science and engineering graduate students increased from 4 percent in 1982 to 6 percent in 1997, Hispanics from 3 to 5 percent, American Indians from 0.3 to 0.5 percent, and Asians from 3 to 8 percent. Concurrently, the proportion of graduate students who are white declined from 79 percent in 1982 to 74 percent in 1997.

Figure 3-2.

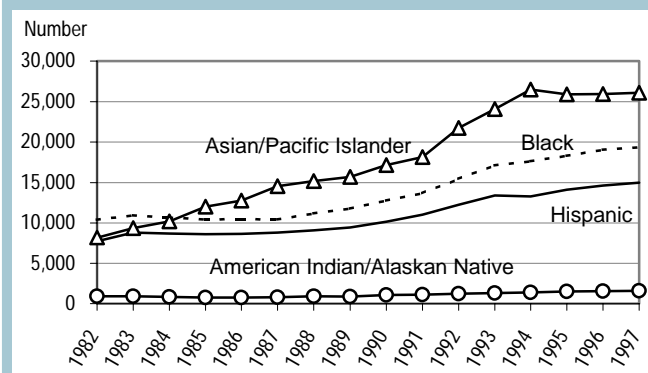
Women as a percentage of science and engineering graduate students, by field: 1980 and 1997

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2000

Figure 3-3.

U.S. citizen and permanent resident science and engineering graduate students, by race/ethnicity of minority students: 1982-97



SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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Improved reporting of race/ethnicity, evidenced by the decline in the number of students of “unknown race/ethnicity,” could account for some of the reported increase in nonwhite students. Specifically, the percentage of graduate students of unknown race/ethnicity declined from 12 percent in 1982 to 6 percent in 1997. (See appendix table 3-5.)

Data on the number of science and engineering graduate students by sex and race/ethnicity jointly are available only as far back as 1994. For the 4 years for which data are available, the numbers of black, Hispanic, and American Indian men and women enrolled as graduate science and engineering students increased. (See appendix table 3-8.) The number of Asian women also increased, while the numbers of white men, white women, and Asian men dropped. Women in each racial/ethnic group account for higher percentages of psychology graduate students and lower percentages of mathematics, computer science, and engineering graduate students than do men in their respective racial/ethnic group. (See text table 3-2.)

Text table 3-2.

Percentage of total science and engineering graduate students, by citizenship, race/ethnicity, sex and field: 1997

Field	Total	U.S. citizens and permanent residents						Temporary residents
		White, non-Hispanic	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	American Indian/Alaskan Native	Other/ unknown	
Science and engineering, total Sciences, total..... Physical sciences..... Earth, atmospheric, & ocean sciences.... Mathematical sciences..... Computer sciences..... Agricultural sciences..... Biological sciences..... Psychology..... Social sciences..... Engineering.....	Men							
	60.3	32.2	3.9	2.0	1.9	0.2	2.7	17.3
	53.3	30.6	3.1	2.1	1.8	0.2	2.4	13.1
	71.5	37.2	3.4	1.6	1.6	0.1	2.2	25.4
	62.7	43.8	1.7	0.7	1.6	0.3	2.3	12.3
	64.9	31.8	3.7	2.1	1.5	0.2	2.6	22.9
	72.6	30.3	8.5	2.1	1.4	0.1	4.8	25.4
	61.6	39.3	1.4	0.9	2.0	0.3	1.6	16.1
	49.9	30.6	3.8	1.4	1.6	0.2	1.9	10.5
	29.2	21.3	1.0	1.7	1.6	0.2	2.0	1.4
	50.7	30.3	1.9	3.3	2.3	0.3	2.2	10.4
	81.5	37.4	6.3	1.9	2.1	0.2	3.6	29.9
	Women							
	39.7	23.7	2.5	2.7	1.8	0.2	1.9	6.9
46.7	28.8	2.8	3.3	2.2	0.2	2.3	7.2	
28.5	13.4	1.9	1.4	0.9	0.1	1.0	9.7	
37.3	27.8	1.1	0.7	1.1	0.2	1.4	4.9	
35.1	18.2	2.6	1.8	1.0	0.1	1.3	10.2	
27.4	8.7	4.6	1.5	0.6	0.0	1.8	10.2	
38.4	26.3	1.2	1.0	1.3	0.2	1.3	7.0	
50.1	30.7	4.0	2.4	1.9	0.2	1.8	9.0	
70.8	51.6	2.6	5.1	4.2	0.4	4.6	2.4	
49.3	29.9	2.1	5.2	2.7	0.3	2.3	6.7	
18.5	8.2	1.8	0.9	0.6	0.1	0.9	6.1	

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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Trends in Enrollment of Minorities in California and Texas

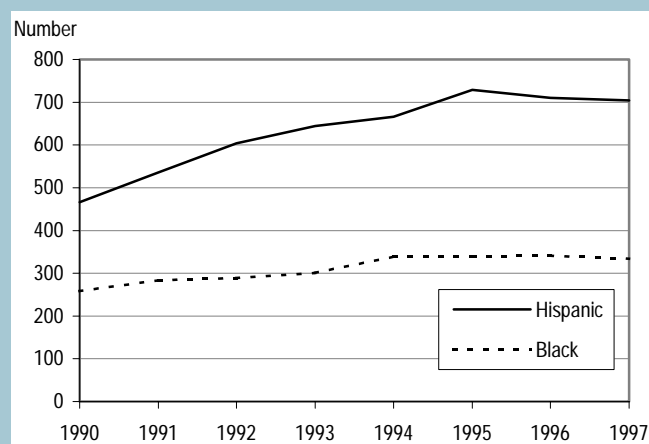
In California and Texas, changes in legislation² or admissions policies³ that barred the use of race in graduate admissions decisions were passed in 1995 and 1996 (Claiborne 1997, Pressley 1997). These changes, which first went into effect for the classes admitted in fall 1997, had no apparent effect on the graduate enrollment of blacks, Hispanics, or American Indians in science and engineering programs in those states. (See appendix tables 3-6 and 3-7.) The policies would be expected to have the greatest effect in public Carnegie Research I institutions because these institutions are most likely to have selective admissions and would be subject to state laws and policies.

Figure 3-4 shows, for example, that in California's public Carnegie Research I institutions, the number of black science and engineering graduate students has remained relatively constant since 1994. The number

² Hopwood v. Texas 78 F.3d, 932 (5th Cir. 1996), cert. denied, 116 S. Ct. 2581 (1996).

³ The Regents of the University of California Policy Ensuring Equal Treatment Admissions (SP-1), approved July 20, 1995

Figure 3-4.
Black and Hispanic graduate science and engineering students in public Research I institutions in California: 1990-97



SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

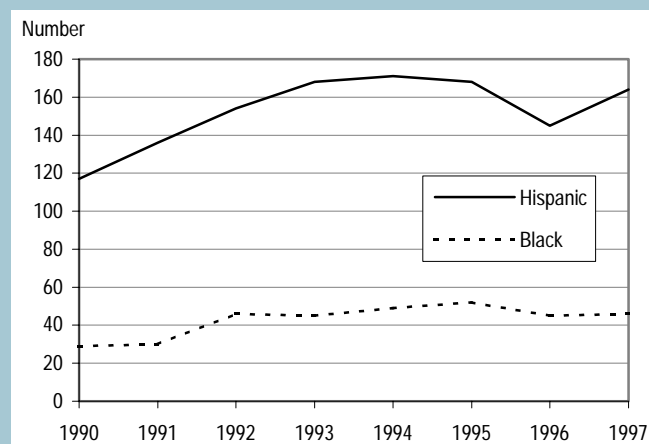
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of Hispanic students rose until 1995 and dropped only slightly in 1996 and 1997. By way of comparison, enrollment of black and Hispanic graduate students in science and engineering in non-Research I institutions (primarily the private ones) in California has been increasing since at least 1990. (See appendix table 3-6.)

All Research I institutions in Texas are public. Fewer than 4,000 graduate students were enrolled in science and engineering programs in these institutions in 1997. (See appendix table 3-7.) Of these, only 46 graduate students were black, 164 Hispanic, and 7 American Indian. The number of black graduate science and engineering students has remained relatively constant since 1992. (See figure 3-5.) The number of Hispanic students rose by 13 percent between 1996 and 1997 (following a 14 percent decrease between 1995 and 1996).

In interpreting these data, note that changes in admissions policy would be expected to affect first-year enrollment in particular. Such changes may have occurred in California and Texas but are not discernible from the data presented here, which are for total graduate enrollment only.

Figure 3-5.
Black and Hispanic graduate science and engineering students in public Research I institutions in Texas: 1990-97



SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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Graduate Education at Minority-serving Institutions

Historically Black Colleges and Universities (HBCUs) play an important role in the science and engineering education of black students (Pearson 1998). Black students completing their undergraduate education at HBCUs are more likely than those from other schools to attend graduate school and to complete doctoral degrees in science and engineering (see chapter 4). HBCUs also account for a substantial share of black science and engineering graduate students, enrolling 17 percent of all black graduate students in science and engineering fields. (See appendix table 3-9.) These institutions account for higher percentages of black enrollment in some fields, notably the agricultural sciences (38 percent of all black graduate students in this field), physical sciences (30 percent), and biological sciences (27 percent) in 1997.

Unlike HBCUs, the institutions classified as Hispanic-serving Institutions (HSIs) are constantly changing. The Higher Education Act, Title III, Section 316, states that an HSI must:

- be a public or other nonprofit institution;
- provide a bachelor's degree or at least a 2-year program acceptable toward a degree;
- be accredited by an accrediting agency or association recognized by the Secretary of Education;
- have a high enrollment of needy students;

- have low average educational and general expenditures;
- have at least 25 percent Hispanic undergraduate full-time equivalent student enrollment;
- provide assurances that not less than 50 percent of its Hispanic students are low-income individuals and first-generation college students; and
- provide assurances that an additional 25 percent of its Hispanic students are low-income individuals or first-generation college students.⁴

Among the top 50 institutions enrolling Hispanic graduate students in science and engineering in 1997, 16 were designated as HSIs in 1996. (See appendix table 3-10.) A majority of the top 50 are in Puerto Rico, Florida, Texas, and California. Puerto Rican institutions enroll 12 percent of all Hispanic graduate science and engineering students, 21 percent of all Hispanic graduate students in the physical sciences, and 28 percent of all Hispanic graduate students in agricultural sciences. (See appendix table 3-11.)

Few Tribal Colleges and Universities offer graduate programs; none had graduate students in science and engineering in 1997.

⁴ The Higher Education Act of 1965, Title III, Section 316 (PL 89-329), as amended and 20 U.S.C. 1059c.

Top 10 Institutions Enrolling Asian, Black, Hispanic, and American Indian Graduate Students in Science and Engineering

The top institutions enrolling minority graduate students in science and engineering reflect the regional demographics of minority populations. Five of the top institutions enrolling Asian graduate students are in California. The top institutions enrolling Hispanic graduate students are in Puerto Rico, California, Texas, and Florida—all states with high concentrations of Hispanics in their population. Of the top 10 institutions with the largest numbers of black graduate students, 6 are Historically Black Colleges and Universities and all but 2 are located in the South. Five of the top institutions enrolling American Indians are in Oklahoma or California, states with high concentrations of American Indians in their population. (See text table 3-3.)

Persons with disabilities

Data are not available on trends in graduate enrollment for students with disabilities. The reason for this is that the National Science Foundation's Survey of Graduate Students and Postdoctorates in Science and Engineering does not collect data on students with disabilities. Moreover, data on disabilities do not tend to be included in comprehensive institutional records; and, if they are, such information is likely to be kept confidential as a means of providing special services to students.

The National Center for Education Statistics through its National Postsecondary Student Aid Study collects data on disability status from a sample of graduate students.⁵ Data from the most recent survey reveals that about 3 percent

⁵ The survey defines students with disabilities as those who reported having one or more of the following conditions: a specific learning disability, a visual handicap, hard of hearing, deafness, a speech disability, an orthopedic handicap, or a health impairment.

Text table 3-3.

The top 10 universities enrolling Asian, black, Hispanic, and American Indian graduate students in science and engineering: 1993–97, ranked by number of graduate students in 1997

Academic institution	1993	1994	1995	1996	1997
Asian/Pacific Islander					
University of California, Los Angeles.....	619	755	800	703	614
Stanford University.....	501	511	562	606	577
University of Houston.....	577	479	447	487	553
University of California at Berkeley.....	423	493	538	547	523
University of Southern California.....	630	535	495	532	522
San Jose State University.....	730	757	650	446	441
University of Hawaii at Manoa.....	329	299	311	350	390
George Mason University.....	267	300	328	338	372
Massachusetts Institute of Technology.....	320	347	351	383	367
Rutgers, the State University of New Jersey.....	282	281	291	225	339
Black					
Howard University.....	444	491	477	507	524
Southern University A & M, All Campuses.....	172	221	292	334	323
North Carolina Central University.....	95	90	105	257	320
Clark Atlanta University.....	275	321	297	297	285
Chicago State University.....	351	260	299	268	259
Jackson State University.....	217	225	223	238	232
University of Michigan.....	237	219	222	244	232
Georgia Institute of Technology.....	258	260	228	216	230
North Carolina A&T State University.....	146	218	244	251	230
Louisiana State University.....	152	179	190	220	222
Hispanic					
University of Puerto Rico, Rio Piedras Campus.....	1093	850	811	798	848
University of Puerto Rico, Mayaguez Campus.....	345	332	400	519	517
Florida International University.....	248	309	332	321	349
Caribbean Center for Advanced Studies.....	178	202	324	320	319
University of Texas at El Paso.....	166	172	191	230	212
Texas A&M University.....	190	182	190	223	202
California State University at Los Angeles.....	131	149	168	195	196
University of California, Los Angeles.....	140	191	196	182	186
University of California at Berkeley.....	198	192	179	188	181
Texas A&M University-Kingsville.....	125	127	132	131	177
American Indian/Alaskan Native					
Oklahoma State University.....	25	33	45	48	51
University of Oklahoma.....	45	40	51	54	47
University of California at Davis.....	7	4	14	17	32
Northern Arizona University.....	26	27	24	28	29
University of Washington.....	18	19	25	28	28
University of California, Los Angeles.....	16	24	25	25	26
University of Colorado.....	25	17	17	30	26
University of Kansas.....	9	10	8	28	26
University of New Mexico.....	18	16	19	20	26
University of California at Berkeley.....	16	23	24	22	24

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

of graduate students studying in all fields—science and engineering as well as non-science and -engineering—reported a disability in 1996. (See appendix table 3-12.)

Students with disabilities are about as likely to be enrolled full time as those without disabilities. In 1996, 34 percent of students with disabilities and 32 percent of those without were enrolled full time in graduate and first-professional programs.⁶ (See appendix table 3-12.)

Field choices

Women

Women accounted for roughly half or more than half of all graduate students in some science fields: in 1997, for example, 71 percent of the graduate students in psychology were women, as were 50 percent in the biological sciences, and 49 percent in the social sciences. (See figure 3-2.) Between 27 percent and 38 percent of the graduate students in most other science fields—physical sciences; earth, atmospheric, and ocean sciences; mathematical sciences; computer sciences; and agricultural sciences—were female. In contrast, however, fewer than 20 percent of the graduate students in engineering were women.

⁶First-professional programs include those in chiropractic medicine, medicine, dentistry, optometry, osteopathic medicine, pharmacy, podiatry, and veterinary medicine.

Minorities

The field distributions of science and engineering graduate students for the various racial/ethnic groups are quite different. Larger percentages of black, Hispanic, and American Indian students, as well as of white students, were in the social and behavioral sciences compared to Asian students in 1997. More specifically, half or more of black, Hispanic, and American Indian students and 40 percent of white students were in psychology or the social sciences compared with 20 percent of Asian students. On the other hand, larger percentages of Asian graduate students than of other groups were in engineering and computer science. (See text table 3-4.)

Persons with disabilities

There are substantial variations in graduate field choice based on disability status. Smaller percentages of graduate students with disabilities than of those without disabilities were in the life and physical sciences and in engineering, computer science, and mathematics in 1996. Roughly the same proportions of graduate students with and without disabilities were in the social and behavioral sciences and in many non-science and -engineering fields. On the other hand, a much higher percentage of students with disabilities than of those without disabilities were enrolled in graduate health programs. (See figure 3-6 and appendix table 3-13.)

Text table 3-4.

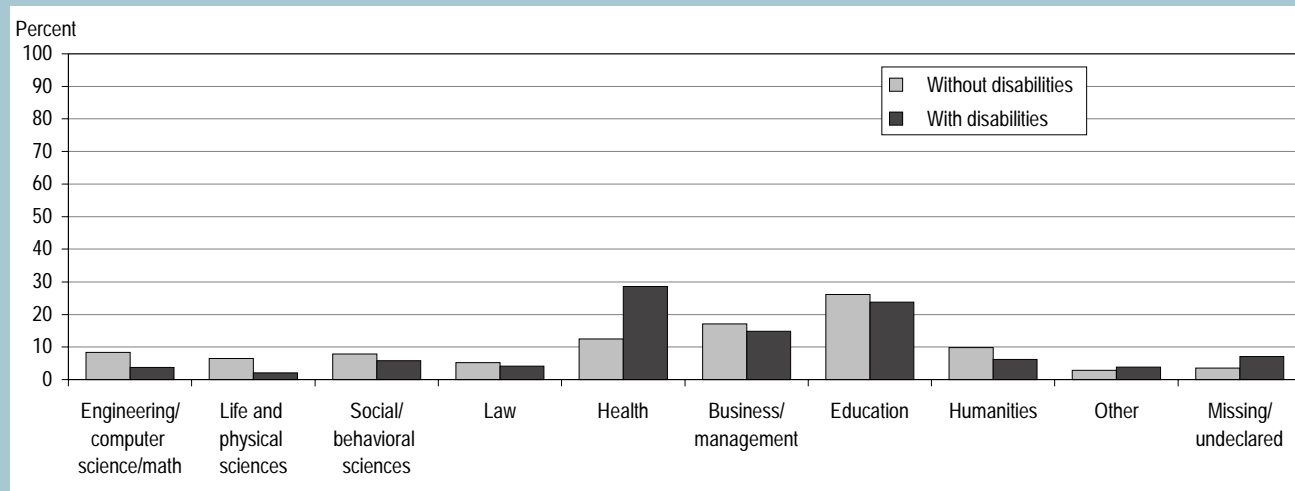
Percentage distribution among fields of science and engineering graduate students, by citizenship and race/ethnicity: 1997

Citizenship and race/ethnicity	Science and engineering field									
	S&E total	Physical sciences	Earth, atmospheric, and ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences	Engineering
Total.....	100.0	7.6	3.6	4.1	8.8	2.9	14.0	13.0	21.1	24.8
Temporary residents.....	100.0	11.0	2.5	5.6	13.0	2.8	11.3	2.0	14.9	36.9
U.S. citizens and permanent residents.....	100.0	6.5	3.9	3.6	7.5	2.9	14.9	16.6	23.1	20.9
White, non-Hispanic.....	100.0	6.9	4.6	3.7	6.2	3.4	15.4	17.0	22.7	20.2
Asian/Pacific Islander	100.0	6.3	1.6	4.0	18.0	1.2	17.2	7.3	13.2	31.3
Black, non-Hispanic.....	100.0	4.9	1.1	3.4	6.7	1.2	11.2	18.8	37.9	14.8
Hispanic.....	100.0	5.2	2.7	2.8	4.8	2.7	13.2	20.6	29.1	18.8
American Indian/Alaskan Native.....	100.0	4.4	5.1	2.7	3.8	3.9	12.4	21.3	31.6	14.9
Other/unknown race/ethnicity.....	100.0	5.3	2.8	3.4	12.5	1.8	11.1	18.4	20.7	23.8

SOURCE: National Science Foundation/Division of Science Resources Studies, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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Figure 3-6.
Field distribution of graduate students, by disability status: 1996



SOURCE: U.S. Department of Education, National Center for Education Statistics. 1995–96 National Postsecondary Student Aid Study, data analysis system.

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Enrollment status

Women

Regarding enrollment status (full- versus part-time enrollment), the proportions of men and women are about equal. In 1997, 68 percent of female and 72 percent of male graduate students in the sciences were enrolled full time. In engineering, 67 percent of women and 65 percent of men were enrolled full time. (See appendix table 3-14.)

Minorities

There is little variation by racial/ethnic group in full-versus part-time science and engineering graduate enrollment of U.S. citizens and permanent residents. Roughly 60 percent to 65 percent of each racial/ethnic group were enrolled full time; the single exception to this was American Indian students, 70 percent of whom were enrolled full time. (See appendix table 3-15.)

Persons with disabilities

Students with disabilities⁷ are about equally likely to be enrolled full time in all fields as those without disabilities. In 1996, 34 percent of students with disabilities and

32 percent of those without disabilities were enrolled full time in graduate and first-professional⁸ programs in 1996. (See appendix table 3-12.)

Sources of financial support

Women

Among full-time graduate students in engineering in 1997, the primary sources of financial support for men and women were similar: 25 percent of men and 27 percent of women relied primarily on self support, 36 percent of men and 37 percent of women relied primarily on institutional support, and 24 percent of men and 23 percent of women relied primarily on Federal support. (See appendix table 3-16.)

In the sciences, institutional support was the primary source of support for 45 percent of men and 43 percent of women who were enrolled full time. Female graduate students in the sciences were more likely than males to be self-supported (35 percent versus 26 percent), but within science fields the differences are generally smaller. Similarly, female full-time graduate students were less likely than males to have Federal support (16 percent versus 21 percent) in the sciences as a whole, but within science

⁷ The source (U.S. Department of Education, National Center for Education Statistics, 1995-96 National Postsecondary Student Aid Study) defines students with disabilities as those who reported that they had one or more of the following conditions: a specific learning disability, a visual handicap, hard of hearing, deafness, a speech disability, an orthopedic handicap, or a health impairment.

⁸ Includes chiropractic medicine, medicine, dentistry, optometry, osteopathic medicine, pharmacy, podiatry, and veterinary medicine.

fields the differences are generally smaller. In each major science field, however, a lower percentage of female full-time graduate students than male had Federal support.

Minorities

Among U.S. citizen and permanent resident science and engineering graduate students enrolled full time for the full year, a smaller proportion of Asians (21 percent) received loans than of whites (36 percent) or of underrepresented minorities⁹ (43 percent). On the other hand, larger percentages of Asians than of other groups received research assistantships and teaching assistantships. (See appendix table 3-17.) A larger share of underrepresented minorities than of whites or Asians received grants. These differences may be due at least in part to variations in field as well as eligibility for various types of aid. For example, Asians who entered graduate school as students on temporary visas may not have been eligible for many Federal loan programs.

⁹ Underrepresented minority categories are American Indian; black, non-Hispanic; and Hispanic.

Persons with disabilities

Although the National Center for Education Statistics collects data through its National Postsecondary Student Aid Study on disability status from a sample of graduate students and provides information on field and enrollment status, the number of students with disabilities in the sample is too small to generate reliable data on financial support for those in science and engineering programs.

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